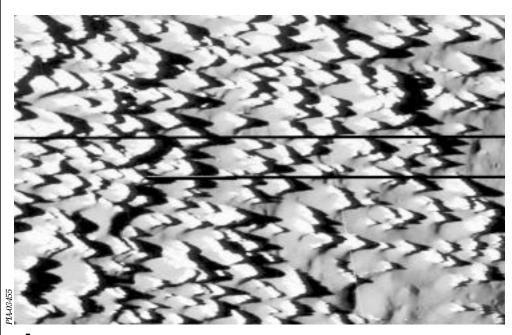
Jet Propulsion Laboratory

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Galileo shows a spiky Callisto

By Guy Webster

Near right: The highest-resolution views ever obtained of any of Jupiter's moons, taken by Galileo in May 2001, reveal numerous bright, sharp knobs covering a portion of Callisto. The knobby terrain seen throughout is unlike any seen before on Jupiter's moons. The spires are very icy but also contain some darker dust. As the ice erodes, the dark material apparently slides down and collects in low-lying areas. Over time, as the surface con tinues to erode, the icy knobs will likely disappear, producing a scene similar to the image at far right.



A spiky landscape of bright ice and dark dust shows signs of slow but active erosion on the surface of Jupiter's moon Callisto in new images from JPL's Galileo spacecraft.

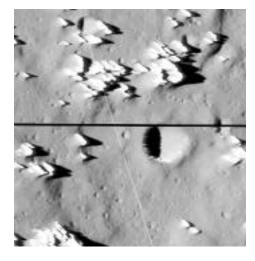
The pictures taken by Galileo's camera on May 25 from a distance of less than 138 kilometers, or about 86 miles, above Callisto's surface give the highest resolution view ever seen of any of Jupiter's moons.

"We haven't seen terrain like this before. It looks like erosion is still going on, which is pretty surprising," said James Klemaszewski of Academic Research Lab in Phoenix. Klemaszewski is processing and analyzing the Galileo Callisto imagery with Drs. David A. Williams and Ronald Greeley of Arizona State University. The images were released by JPL.

Callisto, about the same size as the planet Mercury, is the most distant of Jupiter's four large moons. Callisto's surface of ice and rock is the most heavily cratered of any moon in the solar system, signifying that it is geologically "dead." There is no clear evidence that Callisto has experienced the volcanic activity or tectonic shifting that have erased some or all of the impact craters on Jupiter's other three large moons.

The jagged hills in the new images may be icy material thrown outward from a large impact billions of years ago or the highly eroded remains of a large impact structure, Williams said. Each bright peak is surrounded by darker dust that appears to be slumping off the peak.

"They are continuing to erode and will eventually disappear," Klemaszewski said. One



theory for an erosion process is that, as some of the ice sublimes away into vapor, it leaves behind dust that was bound in the ice. The accumulating dark material may also absorb enough heat from the Sun to warm the ice adjacent to it and keep the process going. The new images show portions of the surface where the sharp knobs have apparently eroded away, leaving a plain blanketed with dark material.

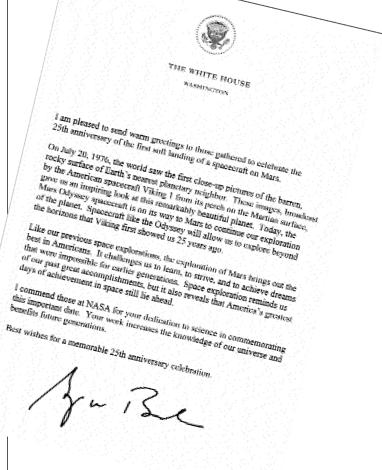
The close-up images show craters as small as about 3 meters (10 feet) across, though not as many as some predictions anticipated. One scientific goal from the high-resolution images is to see how many small craters are crowded onto the surface. Crater counts are one way to estimate the age of a moon's surface, and since Callisto has been so undisturbed by other geological processes, its cratering density is useful in calibrating the estimates for Jupiter's other moons.

The close-ups and the first complete Callisto global color picture from Galileo are available online at http://www.jpl.nasa.gov/images/callisto.

President Bush congratulates Lab on Viking anniversary

JPL Director Dr. Charles Elachi recently received the letter at right from President Bush, who congratulated the Lab on its role on the Viking mission, the first to land a spacecraft on Mars.

Viking celebrated its 25th anniversary this summer



WFPC2 images 'egg' nebula

The Wide Field and Planetary Camera 2, designed and built by JPL for NASAs Hubble Space Telescope, has provided a new, detailed image of violent gas collisions that produced supersonic shock fronts in a dying star.

Stars like our Sun will eventually die and expel most of their material outward into shells of gas and dust. These shells eventually form some of the most beautiful objects in the universe, called planetary nebulae.

"This new image gives us a rare view of the early death throes of stars like our Sun," said Dr. Raghvendra Sahai, a member of the science team at JPL for the camera. "For the first time, we can see phenomena leading to the formation of planetary nebulae. Until now, this had only been predicted by theory, but had never been seen directly."

The object is sometimes called the Rotten Egg Nebula, because it contains a lot of sulphur. It is also known as the Calabash Nebula, and is 1.4 light-years (more than 8 trillion miles) long and located some 5,000 light-years (2,900 trillion miles) from Earth.

The densest parts of the nebula are

composed of material ejected recently by the central star and accelerated in opposite directions. This material is zooming away at speeds up to 1 1/2 million kilometers per hour (1 million mph). Most of the star's original mass is now contained in these bipolar gas structures.

A team of Spanish and American astronomers used Hubble to study how the gas stream rams into the surrounding material. They believe that such interactions dominate the formation process in planetary nebulae.

Much of the gas flow observed today seems to stem from a sudden acceleration that took place only about 800 years ago. Astronomers believe that 1,000 years from now, the Calabash Nebula will become a fully developed planetary nebula, like a butterfly emerging from its cocoon.

Other scientists on the team include Carmen Sanchez Contreras of JPL and Valentin Bujarraba and Javier Alcolea of Observatorio Astronomico Nacional, Spain.

The picture, taken last December, is online at http://www.jpl.nasa.gov/images/wfpc.

News Briefs



William Langer



Dave Linick

Langer named Division 320 manager

WILLIAM LANGER has been named manager of the Earth and Space Sciences Division in the Engineering and Science Directorate.

Langer joined the Laboratory in 1991 after an academic career in radio astronomy and a stint at the Princeton Plasma Physics Laboratory. His research in astrophysics at JPL has concentrated on understanding star formation, the life cycle of interstellar material, and the dynamics and chemistry of protoplanetary disks.

Langer has held various science leadership and management positions at JPL, including lead scientist for Astrophysics, discipline program manager for Astrophysics, JPL project scientist for Herschel, and director of the recently established Long Wavelength Astrophysics Center of Excellence.

Linick new Systems Division manager

TERRY (DAVE) LINICK has been named manager of the Systems Division in the Engineering and Science Directorate.

Linick joined JPL in 1975 as an engineer. Since then, he has held the following engineering and management positions: sequence team chief, Voyager Project; mission operations systems engineer, Galileo Project; manager, Multimission Operations Systems Office; program manager, TMOD Operations Program Office.

During that time, he also managed Mission Operations System Engineering Section, then was deputy manager for the Institutional Computing and Mission Operations Division. In 2000 Linick was named the deputy manager of the Systems Division.

4 JPL-led Earth proposals funded

Four JPL-led Earth science proposals have been selected for funding under NASA's Instrument Incubator Program out of 11 selected by the agency earlier this month.

NASA awarded 11 new contracts for technology development of innovative Earth science remote-sensing instruments under the program, whose objective is to invest in new and innovative technologies that could lead to smaller, less expensive and more efficient flight instruments.

The four selected JPL-led proposals and their principal co-investigators

- Advanced Precipitation Radar Antenna and Instrument, EASTWOOD IM, principal; includes participation by UCLA, ILC Dover, and JPL Divisions 33 and 35).
- Laser Absorption Spectrometer for Global-Scale Profiling of Tropospheric Carbon Dioxide, ROBERT MENZIES, principal; includes partici-

pation by Caltech, Coherent Technologies Inc., Colorado State University, and JPL Divisions 32 and 38.

- Dual-Low-Frequency Radar for Soil Moisture Under Vegetation and At-depth, MAHTA MOGHADDAM, principal; includes participation by UCLA, Harvard University, Massachusetts Institute of Technology, Oregon State University, Boston University, Arizona State University and JPL Division 33.
- Development of Ultra Stable Microwave Radiometers for Future Sea Surface Salinity Missions, WILLIAM WILSON principal; includes participation by Goddard SFC and JPL Divisions 33 and 38.

The technologies selected include active and passive techniques for measuring global carbon dioxide, the buildup of which may be a contributor to the global increase in the greenhouse effect. Also selected are instrument technologies for microwave radiometry and advanced radars to measure global precipitation, soil moisture and sea surface salinity, leading to a more accurate understanding of climate change.

In addition, investments will be made in instrument technologies for the measurement of far-infrared thermal radiation, an emerging science area not previously explored, with the potential to better understand the Earth's radiation balance.

Instrument technologies leading to the potential measurement of tropospheric ozone and other gases from space will be advanced by investments in Fabry-Perot interferometer technologies. Geomagnetic measurements enabled from investments in magnetometer technologies can provide a means to study the structure and dynamics of the Earth's interior, leading to better utilization of natural resources including water and land use and the mitigation of natural hazards such as earthquakes, volcanoes, flooding, sea level change, and severe storms.

NASA received 64 proposals for technology development efforts. The total funds made available for the 11 selected investigations averages nearly \$1 million per year for three years or a total of approximately \$29.5 million.

For more information, go online to ftp://ftp.hq.nasa.gov/pub/pao/contract/2001/c01-q.txt.

Weight Watchers program underway

A new Weight Watchers at Work series is now underway. Meetings are held on Tuesdays through Dec. 18, with no meeting the week of Thanksgiving.

Fees are prorated at \$10.95 per meeting. To sign up, call LAURIE LINCOLN at ext. 4-1612.

Special Events Calendar

Ongoing Support Groups

Alcoholics Anonymous—Meetings are available. Call the Employee Assistance Program at ext. 4-3680 for time and location

Codependents Anonymous—Meeting at noon every Wednesday. Call Occupational Health Services at ext. 4-3319. End of Life Issues and Bereavement—Meets the second Monday of the month at noon. For location, call the Employee Assistance Program at ext. 4-3680. Gay, Lesbian and Bisexual Support Group—Meets the first and third Fridays of the month at noon in Building 125-133. Call the Employee Assistance

Herrera at ext. 3-0664.

Parent Support Group—Meets the third Thursday of the month at noon. For location, call the Employee Assistance Program at ext. 4-3680.

Program at ext. 4-3680 or Randy

Senior Caregivers Support Group— Meets the first Tuesday of the month at noon. For location, call the Employee Assistance Program at ext. 4-3680.

Friday, August 31

Ethics Training—Available to all personnel from 2:30 to 3:30 p.m. in von Kármán Auditorium. A list of training sessions is available at online at http://hr/et; search on "Ethics." To arrange group presentations, call Martha Avina, ext. 4-3154.

Von Kármán Lecture Series—Dr. Lucile Jones, visiting research associate at Caltech and scientist-in-charge for Southern California, U.S. Geological Survey, will present "Earthquake Prediction: A Practical Approach to an Impossible Problem" at 7 p.m. in The Forum at Pasadena City College, 1570 E. Colorado Blvd. Open to the public.

Tuesday, September 4

JPL Gamers Club—Meeting at noon in Building 301-227.

JPL Genealogy Club—Meeting at noon in Building 301-271.

Wednesday, September 5

Associated Retirees of JPL/Caltech— Meeting at 10 a.m. at the Caltech Credit Union, 528 Foothill Blvd., La Cañada.

Thursday, September 6

Eldercare and Caregiving Issues—JPL's Employee Assistance Program and the Senior Caregivers Support Group will host. Speakers include Ian Binder, an expert in long-term care insurance; Margie Thornhill, RN, a geriatric care coordinator with Huntington Hospital Senior Care Network; and David Bunn, an attorney specializing in elder law

and probate. To be held from 11:45 a.m. to 1 p.m. in von Kármán Auditorium.

JPL Gun Club—Meeting at noon in Building 183-328.

Saturday, September 8

Folk Music—Bluegrass performers The Cache Valley Drifters will perform at 8 p.m. in Caltech's Dabney Lounge. Tickets are \$12 for adults, \$4 for kids under 12. Call (626) 395-4652 or log on to http://www.cco.caltech.edu/~folkmusi.

Monday, September 10

JPL Softball—Fall season begins. Players can join an existing team until Oct. 12. Call Kelly Perry at ext. 4-3382.

Tuesday, September 11

Ethics Training—To be held from 10 to 11 a.m. in von Kármán Auditorium. A list of training sessions is available at online at http://hr/et; search on "Ethics." To arrange group presentations, call Martha Avina, ext. 4-3154. JPL Stamp Club—Meeting at noon in Building 183-328.

Tues., Sept. 11-Wed., Sept. 12 Investment Advice—TIAA/CREF will hold individual counseling sessions in T-1720. For an appointment, call (800)

Wednesday, September 12

877-209-3140, ext. 2614.

Investment Advice—Fidelity will hold individual counseling sessions in T-1720. For an appointment, call (800) 642-7131

JPL Amateur Radio Club—Meeting at noon in Building 238-543.

JPL Toastmasters Club—Meeting at 5 p.m. in the Building 167 conference room. Guests welcome. Call Joy Hodges at ext. 4-7041.

Thursday, September 13

"Near-Earth Objects: Finding Them Before They Find Us"—Dr. Don Yeomans, manager of the Near-Earth Objects Program Office, will speak at 11 a.m. in von Kármán Auditorium.

Friday, September 14

TIAA/CREF Workshop and Enrollment—
"Income Options" will be presented
from 1 to 3 p.m. in Building 180-101
for employees who are within seven
years of retirement. Topics include the
amount of income needed in retirement,
replacement ratio, annuity vs. nonannuity, and cash options. For those
newly eligible for Caltech/JPL Retirement Plan participation, an enrollment
meeting will be held at noon in Building
180-101. Assistance in selecting investment options and completing enrollment forms will be available.

Photo courteesy Nancy Kappell

5 JPLers win SFA honors

Photo above, front row: Fred McNutt, left, and Harry Detweiler, guests; back row, from left: Jenny Cruz, Annie Richardson, Astronaut Doug Wheelock, Sherry Owen, Gerry Gaughen, Harry Balian. Five JPL employees earlier this month received NASAs Space Flight Awareness award and traveled to Kennedy Space Center to see the Aug. 10 launch of Space Shuttle Discovery.

Honorees Harry Balian (Section 345), Jenny Cruz (314), Gerry Gaughen (349), Sherry Owen (3235) and Annie Richardson (3235) also received a VIP tour of Kennedy Space Center as part of the award.

At JPL, the Space Flight Awareness Program is part of the Reward & Recognition Program. For information, log on to http://eis.jpl.nasa.gov/sec614/reward.

NASA bestows annual Honor Awards

JPL employees, contractors and partners were recognized by NASA for their outstanding work over the past year as the Lab held the agency's annual Honor Awards ceremony Aug. 8.

Following is a list of recipients. For more detailed information, log on to http://techinfo.jpl.nasa.gov/jpl/awards.

Public Service Group Achievement Award

AEC-Able Engineering Company.

Group Achievement Award

ACRIM III Instrument Implementation and Support Team; Airborne Multi-angle Imaging SpectroRadiometer Team; Automated Scheduling and Planning Environment Development Team; ASTER Science Team and ASTER Product Generation System Group; Avionics Operations, Software Development, and Test Teams for the Cassini Mission; Cassini-Jupiter Microwave Observing Campaign Team; Cryogenic Submillimeter Detector Team; Deep Space 1 Rescue Team; Deep Space Network Enhancement Team; Enose Team; FIDO and K9 Rover Teams; Fiscal Year End Close Core Team; Gigabit Network Deployment Team; Multi-angle

Imaging SpectroRadiometer Team; PACRIM 2000 AirSAR Data Acquisition Team; Rechargeable Lithium-Ion Battery Team; Satellite Ocean Atlas Team; Shuttle Radar Topography Mission Team; SRTM Algorithm Development, Product Processing, and Validation Team; SRTM Attitude and Orbit Determination Avionics Team; SRTM C-Band Radar Antenna and Electronics Development Team; SRTM Mechanical Systems Development Team; SRTM Mission Design and Payload Operations Team; SRTM Project Management, System Engineering, Mission Assurance and Science, and Public Outreach Team; Smart Shop (e-Make) Implementation Team; Special Acquisition Teams.

Public Service Medal

T. Jeffrey Harvey, Rae Stiening.

Exceptional Scientific Achievement

Medal

Richard Gross.

Exceptional Engineering Achievement Medal

Yoseph Bar-Cohen, Rolando Jordan, Lutfollah Maleki.

Exceptional Service Medal

Ceptional Service Medal Christina Alvarado, Carol Bruegge, Courtney Duncan, Patricia Ann Ehlers, Bjorn Eng, Gary Geller, Reza Ghaffarian, Christian Hidalgo, Larry Hovland, John C. Kelly, M.L. MacMedan, Diana Meyers, Ellen O'Leary, David Rodgers, Paul Rosen, Karen Schlue, David M. Seidel, Kendra Short, Burton Sigal, Eli Skulsky, Andre Stefanovich, Bruce Tsurutani, Marek Tuszynski, Hugo Velasquez, Richard Wallace, Gail Yepez. Exceptional Achievement Medal

Robert Axsom, Graham Bothwell,
Roger Diehl, David Diner, Riley Duren,
Donald Eagles, Howard Eisen, Virginia
Ford, Roger Helizon, George Helou, Eric
Hochberg, Brian Kennedy, Yunjin Kim,
Patrick Kleinhammer, Michael Kobrick,
Edward Litty, Larry Matthies, Derrick
Nybakken, Mimi Paller, John Peterson,
Margaret Amy Ryan, David Seal, Eugene
Serabyn, Scott Shaffer, Samuel Sirlin,
Frederick Stuhr, Jeffrey Umland,
Charles Vanelli, Louise Veilleux, Enrique Villegas, Mary White, Dong Wu,
Ronald Zenone.

Outstanding Leadership Medal Neil Herman, Marc Rayman, Yuhsyen Shen, Jakob van Zyl. Distinguished Service Medal

Edward Caro, Larry Dumas, Edward Stone.

DALARONS Following a visit competition, a padecide the Lab is EXCELLENT ADVENT

Following a visit to JPL for a robotics competition, a pair of highschoolers

decide the Lab is the place to work



Aaron Belsh works with a rover wheel model.

HAN HIGH SCHOOL STUDENTS DAN DEMPSEY AND AARON BELSH PARTIC-IPATED IN JPL'S 2001 OPEN HOUSE IN MAY, THEY HAD no idea it would lead to their chance to see one of their dreams come true.

As members of the For Inspiration and Recognition of Science and Technology program, 17-year-old Belsh and 16-year-old Dempsey were on Lab displaying a robot their Chatsworth High School robotics team constructed from scratch.

As the Open House demonstration progressed, the two high school juniors were excited to be at JPL, displaying robotics technology to the public. But they were eager to explore the Lab, wanting to roam and investigate wherever they could.

Then the opportunity came. "During a lull between the crowds," Dempsey said, "I decided to go looking around in any building that seemed interesting." With Belsh covering at the demonstration tent, Dempsey set out on a solo mission in true Alan Shepard style.

Dempsey took his time sizing things up, "then I stumbled into Building 170," he said. And although 170 looks like many other buildings on Lab, for Dempsey it turned out to be where he entered into serendipity.

It was in that building—filled with engineers and machinists where he "ended up talking to some random guy." That "random guy" turned out to be Section 357 Manager William Revere. As the two conversed, the subject of interning came up and Dempsey expressed his and Belsh's dream of becoming interns at JPL.

Revere told Dempsey that an internship just might be possible for the two come summertime, but when Dempsey broke the news to his friend, Belsh was skeptical.

Over the ensuing months Dempsey corresponded with Revere and Section 357 Business Administration Manager Sonia Mejia and, despite the uncertainty, on the morning of July 9, the duo found themselves arriving at JPL as paid summer interns.

"It totally blew my mind that we actually got the job," Dempsey said. "We didn't even want to get paid for it. To us it wasn't about the money.

"We were driving up to the gate," he added, "and I turned to Aaron and I asked, 'Can you actually believe we're going to work at JPL?' We were completely in shock and apprehensive."

Since that first day, they have been making a name for themselves in Section 357.

"As a result of their insightful observations

concerning the numerous modifications made

to Building 170 over the last 40 years, Section

357 is now planning a major upgrade to the enti-

I WHERE

facility," noted Curtis Tucker, deputy section manager

Another project they carved out for themselves was creating an updated floor map of Building 170, replacing the previous one. "Now everyone uses the map we've made," Dempsey said as he cracked a humble smile of accomplishment. They have also been learning new 3D-modeling software programs.

Both love coming to work, although to them, it does not seem like work at all.

"They have been opening doors for themselves" Mejia said. "They are really advanced for high school kids. They're very eager and they look for challenges."

They have been getting a feel for how JPL operates while getting an invaluable learning experience they will apply toward their futures in engineering.

Going into their senior year of high school, they have already decided on their undergraduate majors. Dempsey wants to go to Cal Poly San Luis Obispo for a bachelor's degree in aeronautical/ aerospace engineering. Belsh has been checking out colleges on the East coast, eyeing a bachelor's in mechanical engineering while entertaining thoughts of a career in aerospace.

But it's not just about careers for these two; it's about the adventures they want to experience along the way. They love solving puzzles and meeting and working with new and dynamic people. And they appreciate the responsibility jobs in space exploration carry. "I want to leave my mark on society," Belsh said. "But I also love interacting with people of different cultures."

And JPL is a perfect place to do both.

"To me," Dempsey said, "JPL has always been a dream place.

Whenever you read about advancements in aerospace, JPL has always been at the forefront. That's where I want to

"JPL is known for its strength in being at the leading edge of technology," Belsh said. "And this place has such a great blending of different people.

"Plus, I love the fire-cooked calzone pizza from Cafeteria 303. It's the calzone with the fresh spinach and Italian sausage ... you gotta have the calzone!"

The relationships they are making with their new comrades-in-engineering are further examples of what these two future engineers love about JPL.

When Dempsey lost a chess game in which the loser had to bleach his hair, his co-workers teased him about his new fashion statement, affectionately calling him "tennis ball" or "blondie." But his philosophy about the remarks, as well as the future of space exploration, is that "It's all good."

> Dan Dempsey checks out a Mars Exploration Rover prototype.

"It totally blew my mind that we actually got the job. We didn't even want to get paid for it. To us, it wasn't about the money."

- Dan Dempsey

Oceanography archive center exhibits in Australia

Left to right: Dr. Jorge Vazquez,
(PODAAC scientist); JPL Director
Dr. Charles Elachi; Margaret
Srinivasan (TOPEX/Poseidon-Jason 1
Project Office) and Susan Heinz
(PODAAC User Services Office).

The JPL Physical Oceanography Distributed Active Archive Center (PO.DAAC) exhibited at the International Geoscience and Remote Sensing Symposium in Sydney, Australia last month, an event at which more than 1,500 multi-disciplinary researchers and scientists working in remote sensing–related information technologies attended.

The symposium provided an opportunity for the PO.DAAC and TOPEX/Poseidon Project staff to provide peer-to-peer customer support as well as talk to new, potential data customers.

The PO.DAAC archives and distributes data relevant to the physical state of the ocean on behalf of the NASA Earth Observing System Data and Information System. The 31-member team is staffed by a partnership between JPL and Raytheon. The center works closely with the TOPEX/Poseidon Project-Jason-1 and QuikScat project offices to provide customer support and educational outreach.

JPL Director Dr. Charles Elachi presented a keynote address at the symposium and also also participated in a panel session with other senior officials experienced with various aspects of remote-sensing capability development.



Daily Planet

control for the JFL connection

Classified ads will be available the day before Universe is published, at

http://dailyplanet

JPL's online news source

Editor Mark Whalen

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Notice to Advertisers

Advertising is available for JPL and Caltech employees, contractors and retirees and their families. No more than two ads of up to 60 words each will be published for each advertiser. Items may be combined within one submission. Ads must be submitted on ad car ds, available at the ERC and the Universe office, Bldg. 186-118, or via e-mail to universe@jpl.nasa.gov.

Ads are due at 2 p.m. on the Monday after publication for the following issue.

All housing and vehicle advertisements require that the qualifying person(s) placing the ad be listed as an owner on the ownership documents.

Passings 1

LAWRENCE FISLER, 65, a retired quality assurance engineer in Section 506, died of multiple intra-cranial hemorrhages Aug. 10 at his home in Pueblo West, Colo.

Fisler worked at JPL from 1967–96. He is survived by his wife, Joyce. Cremation and scattering in the Pacific Ocean along the California coast have been carried out.

HUBERT CLARK, 74, a retired senior engineering assistant in Section 322, died of heart failure Aug. 19. Clark joined the Lab in 1961 and retired in 1985. He is survived by son

Hubert, daughter Kathy and three grandchildren.
Burial was in Williams, Az.

L etters

Jeff and I would like to thank our friends at JPL for their support and comfort during my father's recent illness and death. Thanks to the ERC also for the beautiful plant.

Ellen O'Leary and Jeff Plaut

Classifieds

For Sale

AMPLIFIER, acoustic bass, 350 watts, four 15" woofers, built-in graphic equalizer, \$600. 626/358-1786.

AIR CONDITIONER, window unit, 5000 BTU, vg cond., \$70. 790-4984.

BABY ACTIVITY GYM, Fisher Price, lights & sounds, plays 8 tunes w/diff. light patterns, 2 modes play continually or activate by tapping on any of the 3 hanging toys, \$15. 952-0328. BABY SWING, Graco, open top, battery operated, 3 spds, flip-up food/toy tray, adjustable seat angle, washable pastel seat cover, \$30. 952-0328.

BEDROOM SET: armoire, bookshelves, desk, bed frame, in La Canada, \$400/obo. 790-7129.

BUNK BED, oak, loft, w/ladder, loft desk & bookcase/chest, gd cond., \$200. 626/915-1278. CAMERA, Olympus IS-1, SLR 35mm, 1:4.5-5.6 zoom, date pack, case, manual, \$110; BINOCULARS, Steiner Military/Marine 8 X 30, hard Pelikan case, 2 available, \$100/ea or \$180/both. 626/296-1298.

COFFEE, from Kona, top of the line, 100% pure, hand picked from top quality trees, 100% sun dried, rich, dark roast, ltd. supply, discounted 45% at intro. price of \$21/lb. 626/584-9632.

COMPUTER, '95 Mac Performa 475, color monitor, 1 adult user, exc. cond., \$100; COMPUTER CART, wood, casters, 3 pullout and 2 stationary shelves, white, 30 L x 21 W x 29 H, exc. cond., \$55; STEREO CABINET, glass door, 5 shelves, black, 19 3/4 L x 16 W x 46 H, exc. cond., \$85; COFFEE MAKER, Mr. Coffee, 12 cup, auto timer, exc. cond., \$25. 626/793-3561.

COMPUTER EQUIPMENT: CPU, 6 mo. old, 900MHz, Athlon, Slot "A" w/heat sink and fans, \$60; Sound Blaster Live PCI card, \$35; 256 MB SDRAM PC133, 3.3V, \$20. 323/254-5685, John.

COMPUTER MONITOR, ViewSonic 17EA, 17-inch CRT, built-in stereo speakers, works w/ PC or Mac, vg cond., \$100. 626/577-0068. COMPUTER TABLE, Bush model MM66200, 5" caster wheels for easy mobility, keyboard shelf, second side tier for printer or fax, brand new in sealed factory box, retails over \$100, sell for \$50. 626/233-0063. COOLERS, Coleman, \$15/ea; COFFET ABLE and 4 chairs, cherry wood, \$50; END TABLES, 2, cherry wood, \$50; BICYCLES, 2, children's, \$15/ea. 626/357-8210.

CRIB, 3-in-1 convertible, wood finish, w/mattress, \$100. 502-1481.
CRYPT, Forest Lawn Hollywood Hills, 1 companion wall crypt #3139-A&B, unit 7, Courts of Remembrance, value \$11,680, sell for \$10,000/obo, cash only. 530/877-5829.
EXERCISE MACHINE, low-impact elliptical, by ProForm, 485 E Model 927, like new, bought new last year from Sears for \$390,

sell for \$150/obo. 626/284-4694. FURNITURE: sofa, Brocade, Ig., brown, exc. cond., \$400/obo; desk/computer arm/deep file drawer, 5-in-one, solid oak, \$400; hutch/table, antique oak, 400; pottery/ pictures prices vary. 626/358-2036. GARAGE SALE, Sat., Sept. 8, 8 a.m.-1 p.m., furn., clothes, china/glassware, books and misc. items. 3835 El Caminito, La Crescenta. HAND/FINGER EXERCISER, Gripmaster, for guitarists, med. tension, new, never opened orig. \$20, sell for \$10; AUDIO/ VIDEO MIXER, Panasonic WJMX12, mixes 2 NTSC, S-Video or Hi-8 signals into one for great effects, 8 yrs. old, light use, service manual included, \$2,500 new, sell \$225. 352-0075. HYDROLAULIC LIFT, standing frame for rehabilitation following stroke or spinal cord injury, completely adjustable, exc. cond., \$900, 626/794-4541.

LASER POINTER, brand new, high quality, 5 diff. pattern heads, keychain, hard case, 3 batt.; great in presentations for engineers, teachers, tourguides, fun for kids and pets, a gift for almost any occas., \$5. 661/257-4350. LUGGAGE CARRIER, rooftop, Sears fiberglass, \$50. 626/797-6982.

MOVING SALE: Amana refrigerator, white, 4 yrs. old, great cond., \$320; Nordic Track, \$80; patio table & chairs, black wrought-iron w/glass top, \$50; chain-saw, gas, \$20. 626/798-8065.

MOVING SALE: furniture and electrical items, see http://home.earthlink.net/-boudin 626/797-6737.

OVEN, Hotpoint, gas, electric ignition/timer/clock, exc. cond., \$350/obo; WASHER & DRYER, Kenmore 70 series, heavy duty/super capacity, white, exc. cond., \$300 each/obo. 323/896-9733, Karin.

PING PONG TABLE, Stiga Private, kept indoors, grt. cond., \$80. 626/840-0955, Mary, Iv. msg. POCKET PC, Cassiopeia EM-500, Windows CE, Excel, Word, Internet, Pocket Streets, adv. scientific/finance calculators, MP3 player, digital voice recorder, color, handwriting recognition, holster case, manual, box, warranty, brand new, \$275. 909/592-2279. STOVE, gas, O'Keefe & Merritt, double ovens, continous cleaning, almond and black, gd. working condition, needs cleaning up, \$75 firm. 626/284-9664.

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TABLE, end, solid maple, \$25; GRILL/ROTIS-SERIE, Farberware, \$20. 790-3543.

TABLE, din. rm, 116 in. long, 40 in. wide, oak, oval, 2 leaves, 6 chairs, \$175. 790-9823.

TABLE, dinette, square glass top 5' x 5' w/ metal feet and 4 matching chairs, \$700/ obo; BAR STOOLS, 4 matching, metal frame, all

metal feet and 4 matching chairs, \$700/ obc BAR STOOLS, 4 matching, metal frame, all in superb cond., \$300/obo. 626/398-3480. TABLE, drawing/drafting, 23" x 31", wooden, with adjustable tilt/height, exc. condition, \$45. 626/304-0737.

TABLE, patio, round glass, 48", w/4 chairs, \$25. 626/359-7666.

TOOLS, used, professional quality, Craftsman, Makita, Milwaukee, saws, planers, drills, etc. 248-6762.

TWO-WAY RADIOS, Motorola TA280, new in original box, 14 freq., 38 interference codes, 2-mile range, channel scan, VOX, great for families at malls and theme parks, retails \$75/ea., sell for \$100/pair. 626/233-0063. YARD SALE, Sept. 7, 990 Del Rey Ave., Pasadena. 8:30 a.m. 626/797-6737.

Vehicles/Accessories

'98 DODGE Intrepid ES, exc. cond., loaded, V6, 225 hp, wht. ext, pwr. win. and drs., a/c, am/fm cass., 49K mi., \$12K/obo. 714/875-

'98 FORD Explorer, Eddie Bauer, exc. cond., loaded with extras, 2-year bumper-to-bumper warranty. 626/798-8163.

'98 FORD Explorer XLT, 37K mi., exc. cond., auto, a/c, roof rack, five new Michelin tires, \$16,950. 952-0047.

'95 FORD Windstar LX minivan, 3.8L, 2-tone metallic tan and plumb, 76,000 mi., loaded incl. p/s, p/b, p/w, PDL, new dual a/c, keyless entry, roof rack, exc. cond., new tires, \$10,500/obo. 714/750-5267, Lee.
'78 FORD Fairmont, straight 6 cylinder,

100K mi., 1 previous owner, new tires, brakes, battery, exhaust manifold to tail pipe, tune up, recently smogged, runs good, \$2,400/obo. 626/355-5631, betw. 6-10 p.m. HITCH, 5th wheel with tilt, all hardware included, \$400/obo. 682-2392, leave msg. '98 HONDA Civic DX, 36K mi., 1 owner, exc. cond., all maint. records, new tires & CD player, tilt steering, \$11,000/obo. 805/234-0323, or www.begrafic.com/honda.

'92 HONDA Accord EX, auto, a/c, ABS, air bags, 4 dr., pwr. windows/locks, am/fm/cass, rear spoiler, 1 st owner, all records, 93.5K mi., \$8,700/obo. 909/860-0491.

'92 HONDA Accord LX, vg cond., 5 spd., 171K mi., It. green, 4 dr., 1 owner, complete service records, a/c, am/fm/cass., cruise control, pwr. window/doors, driver side air bags, new tires/clutch/belts/hoses/radiator, \$5,200. 626/963-1450. '87 HONDA Accord LX, blue, 4 dr., automatic, 133K mi., runs great, \$2,700/obo. 957-

'81 HONDA Gold Wing GL 1100 I motorcycle, 180K, fully equipped, includes helmet with speakers for intercom, extra custom leather seats, saddle bags and ferring, \$750/obo. 682-2392, leave message.

JEEP Laredo seats, front and back, factory gray, \$75. 626/359-7666.

'90 MAZDA RX-7 convertible, 5-spd. rotary, 137K mi., 2 dr., white w/black top, a/c, CD, fast and fun, \$5,500. 841-4849 or hje@rocketship.com.

'93 NISSAN Pathfinder, 4 x 4 SE, V6, navy w/gray leather, 69K, 5 spd., a/c, cruise, moon roof, running bds., pwr. locks/windows, great truck, vg cond., new belts, all records, \$10,800. 626/791-4694.

71 OLDSMOBILE Cutlass Supreme, a/c, p/s, p/b, 350 cid, 4 bbl carb., 94,000 orig. miles, orig. owner, orig. paint, vinyl top and interior, very clean, \$3,000/obo. 626/284-3068, eves.

'90 SKAMP camper trailer, sleeps 5, electrical connection for towing included, great cond., \$1,500. 626/358-1786. '95 TOYOTA Previa LE, s/c, dark red exterior,

gray interior, seats 7, vg cond., 98K mi., ABS, dual air bags, power locks/windows/ steering, a/c, CD player, a joy to drive, \$10,800. 626/799-9347.

'91 TOYOTA Camry DX, blue, 4 cyl., 120K mi., exc. mechanical, body and interior cond., 4 dr., moonroof, automatic, power windows/locks, am/fm/CD, a/c, \$4,400/obo.626/284-4694.

'88 TOYOTA SR5, V6, a/c, cc, power, 153K mi., towing, flip-up roof, runs great, \$5,400/obo. 626/791-0075.

'84 TOYOTA Cressida, low miles, loaded, leather, full power, sunroof, 1 owner, \$2,200,626/359-7666.

'83 TOYOTA Celica GT coupe, automatic, 168K mi., fair/good cond., reliable, \$600/obo 626/345-0413.

'93 VOLKSWAGEN Golf GL, 4 cyl, 2.0 liter, 5 spd. manual, moon roof, exc. cond., 113K mi., \$5,000. 310/313-1581.

Wanted

BABY SITTER, part-time, for a 3-year-old boy in Altadena, one day a week, mother with child OK. 626/791 0585, evenings, Ulvi or Ayse.

CARPOOLER, from Chino Hills to JPL, work schedule 10 a.m.-6:45 p.m. Ext. 4-1753.

CHILD CARE/tutoring/after-school pickup, for La Canada 8th, 5th and 4th graders in family house. 790-8760.

MOTORCYCLE, Japanese, 2 stroke, prefer 2 cylinders, to fix-up as a project. 562/423-2224, Fred.

METALWORKING TOOLING, raw stock, etc.

352-0075. SPACE INFORMATION/memorabilia from U.S. & other countries, past & present. 790-8523,

Marc Rayman. TRANSCRIBING MACHINE, using any size cassettes. 790-7813, Toni.

VOLLEYBALL PLAYERS, coed, no beginners please, Tuesday nights 8-10 at Eagle Rock High School, \$3/nt. 956-1744, Barbara.

Free

KITTENS, 3, two male, one female, 10 weeks old, two black, one black and white "Figaro" pattern male, tolerant of dogs and grown cats. 626/791-0809.

LAVA ROCK, ground cover, approx. 20 cu. ft. 661/254-3119.

For Rent

ALTADENA house, 2 bd., 1.75 ba., office, detached play/workout rm., a/c, cent. heating, washer/dryer hookups, fireplace, newly refinished hardwd firs., new paint inside/out, new linoleum, new stove, nice area nr. Altadena Colf Course, no pets, non-smokers, gardener & water incl., \$1,800. 626/296-2659.

GLENDALE, East Ridges, room and bathroom; nice-looking, comfortable house, quiet and safe neighborhood, good view; includes garage, washer/dryer and pool; 7 miles from JPL; no smoking or drugs; utilities included, \$425. 323/256-0535, Lucia.

LA CANADA, 2 bd., 1 ba., f/p, French doors, serene and peaceful, back yard, w/mature trees, beautifully remolded, all utilities paid, \$1,900. 949-5713.

LA CRESCENTA, housemate to share sunny, 2-bd. apt., f/p, patio, mtn. view, non-smoker female preferred, \$425 + 1/2 utilities. 249-9739 home or 468-2620 cell, Susan.

MONTEREY HILLS townhouse, 2 bd., 2 ba., 2-car gar., a/c, washer/dryer, 1-yr.-old appliances, patio w/view, skylights, fireplace, pool, spa, end unit, well-maint. complex, 58 units, 12 min. to JPL, \$1,500. 626/794-1716.

NORTH MONTEBELLO townhouse, 3 bd., 3 ba., spacious 2,000 sq. ft. unit, attached 2-

car garage, gated complex with tennis court and pool, \$1,100. 909/598-1232.

PASADENA, 2 bd., 1.5 ba., townhome-style apt., a/c, parking, patio, laundry facilities, no pets, \$1,150 + utilities, fully furnished; \$995 + utilities unfurnished. 626/351-9641.

PASADENA apt., 2 bd., 1 ba., f/p, private patio, garage, laundry rm., a/c, stove, refrigerator, carpets, mini-blinds, good closet and cabinet space, outdoor lighting, great area, Sierra Madre Blvd. near California, close to Caltech, gardener, water and trash paid, \$1,050. 805/967-7725.

PASADENA, apt. to share, fully furnished, a/c, parking, patio, laundry facilities, no pets, \$575 plus utilities. 626/351-9641.

PASADENA, 1 of 3 bedrooms in a mostly furnished house to share w/two mid-20s JPL employees, excellent neighborhood, Orange Grove between Hill and Allen, easy 15-min. drive to JPL, gated parking, in-ground pool, patio, deck, built-in BBO, gardens, fireplace, HW floors, etc., \$500. 626/396-1945.

SYLMAR, new spacious home, 4 bd., 2 ba., option to buy, view of mts. and valley, fo.

SYLMAR, new spacious home, 4 bd., 2 ba option to buy, view of mts. and valley, f/p, Jacuzzi, \$10K credit toward purchase, \$2,695. 626/584-6526.

Real Estate

MAMMOTH LAKES condo unit, 1 bd./loft, 2 ba., exc. cond., newly redecorated & refurnished, floor to ceiling fireplace in liv. rm., balcony offers superb view of Mammoth Mtn., all elec. kitchen, desirable location in complex, close to Canyon Lodge, \$189,500. 249-8524.

PASADENA, 4 bd., 2 ba., ranch home, nr. end of well groomed cul-de-sac, 1 mi. from JPL, 1,465 sq. ft. lot, built in '80, attached 2-car gar., new tile floors/carpeting/kitch. appliances, central air, f/p, great curb appeal, many fruit trees, \$289,000. 626/797-2731. PASADENA, executive condo next to Caltech, totally remodeled 2 bd. +1 3/4 ba., 1,200 sq. ft., newly refinished hardwood floors in dining room, newer appliances, carpet & paint, large balcony, just redone, overlooking beautiful trees; top floor unit in park-like setting, walk to Caltech & S. Lake Ave., nice pool and spa, \$249K. 626/585-9048.

Vacation Rentals

cnt. 626/961-8771.

BIG BEAR LAKEFRONT, lux. townhome, 2 decks, tennis, pool/spa, beaut. master bd. suite, slps. 6. 949/786-6548.

DEL MAR, fully furn. condo, 7 nights, 11/10/01-11/16/01, slps 6, 2 bd., 1.5 ba., living rm., full kitch., cable TV/VCR, game room, sauna, pool/spa, laundry rm., BBQ area, walk to race track and beach, JPL dis-

HAWAII, Kona, ocean front on Keauhou Bay, house and guest house comfortably sleep 6, 3 bd., 2 ba., rustic, relaxing and beautiful, swimming, snorkeling, fishing, spectacular view, near restaurants, golf and other attractions. 626/584-9632.

HAWAII, Maui condo, NW coast, on beach

w/ocean view, 25 ft. fr. surf, 1 bd. w/loft, compl. furn., phone, color TV/VCR, microwave, d/w, pool, priv. lanai, slps. 4, 4/15-12/14 \$105/nite/2, 12/15-4/14 \$120/nite/2, \$10/nite/add'l person. 949/348-8047. MAMMOTH, Chamonix condo, 2 bd., 2 full ba., sleeps 6, fully equipped kitch., incl. microwave & extras, f/p & wood, color TV, VCR, cable, FM stereo, pool & sun area, o/d Jacuzzlis, sauna, game, rec. & laundry rms., play & BBQ areas, conv. to Canyon Lodge, shops, hiking, summer events, daily/wkly rates, summer rates thru Oct. 249-8524. MAMMOTH, Snowcreek, 2 bd., 2 ba., + loft, sleeps 6-8, fully equipped kitchen incl. microwave, D/W, cable TV/VCR, phone, balcony

w/view to mtns., Jacuzzi, sauna, streams, fishponds, close to Mammoth Creek, JPL discount. 626/798-9222 or 626/794-0455.

OCEANSIDE, on the sand, charming 1-bd. condo, panoramic view, walk to pier or harbor, pool, spa, game rm., sleeps 4. 949/786-6548.

OCEANSIDE condo, fully furnished 2 bd., 2

ba., f/p, full kitchen, quiet, relaxing, beautiful setting, located at beachside, BBQ, pool, spa, game room, great ocean view, easy walk to pier and restaurants, sleeps 6, weekly or monthly. 909/981-7492, Jim or Darlene or dfhauge@yahoo.com.

OCEANSIDE, on the sand, charming 1-bd. condo, panoramic view, walk to pier or harbor, pool, spa, game rm, sleeps 4. 949/786-

PACIFIC GROVE hse, 3 bd., 2 ba., fp, cable tv/vcr, stereo/CD, well-eqpd kit. w/microwv, beaut. furn., close to golf, bches, 17 Mile Dr., aquarium, Cannery Row, JPL discnt. 626/441-3265.

ROSARITO BEACH condo, 2 bd., 2 ba., ocean view, pool, tennis, short walk to beach on priv. rd., 18-hole golf course 6 mi. away, priv. secure parking. 626/794-3906. SAN FRANCISCO, Nob Hill honeymoon suite, sleeps 2 max, full kitchen, maid, concierge, \$125/nite, \$750/week. 626/254-1550.